

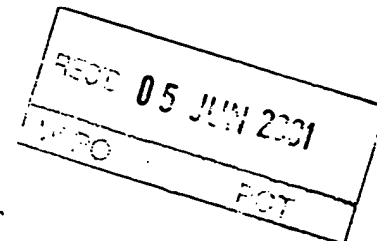
## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

14



Applicant's or agent's file reference CWR 2 265 PCT	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/07829	International filing date (day/month/year) 24 MARCH 2000	Priority date (day/month/year) 24 MARCH 1999
International Patent Classification (I. C.) or national classification and IPC IPC(7): G01R 33/02 and US Cl.: 324/248		
Applicant CASE WESTERN RESERVE UNIVERSITY		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 10 OCTOBER 2000	Date of completion of this report 14 MAY 2001
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer  JAY M. PATIDAR Telephone No. (703) 308-6723

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/07829

## I. Basis of the report.

## 1. With regard to the elements of the international application:\*

☒ the international application as originally filed☒ the description:

pages 1-19, as originally filed

pages NONE, filed with the demand

pages NONE, filed with the letter of

☒ the claims:

pages 20-23, as originally filed

pages NONE, as amended (together with any statement) under Article 19

pages NONE, filed with the demand

pages NONE, filed with the letter of

☒ the drawings:

pages 1-6, as originally filed

pages NONE, filed with the demand

pages NONE, filed with the letter of

☒ the sequence listing part of the description:

pages NONE, as originally filed

pages NONE, filed with the demand

pages NONE, filed with the letter of

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).☐ the language of publication of the international application (under Rule 48.3(b)).☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/ or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.☐ filed together with the international application in computer readable form.☐ furnished subsequently to this Authority in written form.☐ furnished subsequently to this Authority in computer readable form.☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. ☒ The amendments have resulted in the cancellation of:☒ the description, pages None☒ the claims, Nos. None☒ the drawings, sheets/fig None5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/07829

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. statement**

Novelty (N)	Claims <u>3-15</u>	YES
	Claims <u>1-2,16</u>	NO
Inventive Step (IS)	Claims <u>3-15</u>	YES
	Claims <u>1-2,16</u>	NO
Industrial Applicability (IA)	Claims <u>1-16</u>	YES
	Claims <u>None</u>	NO

**2. citations and explanations (Rule 70.7)**

Claims 1,2 and 16 lack novelty under PCT Article 33(2) as being anticipated by Kugai (US 5,589,772).

Kugai discloses a non-destructive testing equipment with a magnetic field generating means (6); a superconducting quantum interference device (22); and a flux transformer (21) that couples the susceptibility signal to the superconducting quantum interference device (Note figure 1 and the whole document).

Claims 1-16 meet the criteria set out in PCT Article 33(4), Industrial Applicability, because the invention can be used in industry.

\_\_\_\_\_ NEW CITATIONS \_\_\_\_\_

-None-

**BEST AVAILABLE COPY**



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> :

G01R 33/02

A1

(11) International Publication Number:

WO 00/57200

(43) International Publication Date:

28 September 2000 (28.09.00)

(21) International Application Number: PCT/US00/07829

(22) International Filing Date: 24 March 2000 (24.03.00)

(30) Priority Data:

60/126,004

24 March 1999 (24.03.99)

US

(71) Applicant (for all designated States except US): CASE WESTERN RESERVE UNIVERSITY [US/US]; 10900 Euclid Avenue, Cleveland, OH 44106 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): FARRELL, David, E. [US/US]; 2176 Chatfield Drive, Cleveland Heights, OH 44106 (US). ALLEN, Christopher, J. [US/US]; 19831 Upper Terrace Drive, Euclid, OH 44117 (US). PAULSON, Douglas, N. [US/US]; 14034 Boquita Drive, Del Mar, CA 92014 (US). FAGALY, Robert, L. [US/US]; 3121 Madera Court, Rancho La Costa, CA 92009 (US). ARENDT, Paul, N. [US/US]; 411 Richard Court, Los Alamos, NM 87544 (US). FOLTYN, Steven, R. [US/US]; 1 Mariposa Court, Los Alamos, NM 87544 (US). BRITTENHAM, Gary, M. [US/US]; 15A West 73rd Street, Apartment 2, New York, NY 10023 (US).

(74) Agent: MINNICH, Richard, J.; Fay, Sharpe, Fagan, Minnich &amp; McKee, LLP, 1100 Superior Avenue, Seventh Floor, Cleveland, OH 44114-2518 (US).

(81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW. ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

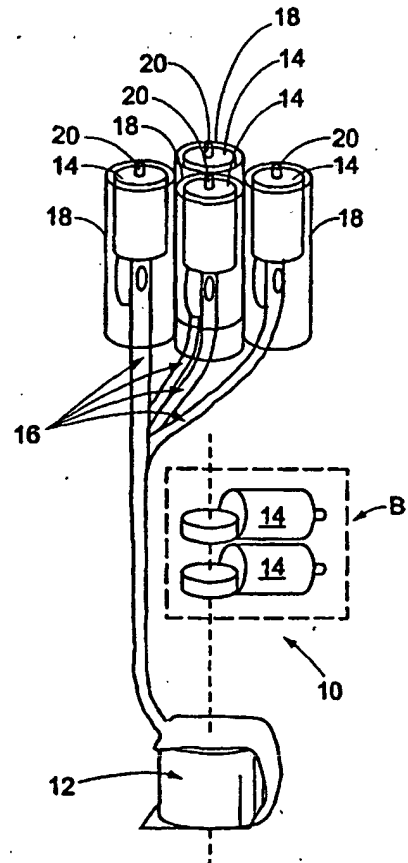
Published

With international search report.

(54) Title: APPARATUS AND METHOD FOR DETERMINING MAGNETIC SUSCEPTIBILITY

## (57) Abstract

The invention relates to an apparatus and method for high-sensitivity non-destructive evaluation of the magnetic susceptibility. An apparatus for determining magnetic susceptibility in an object, the temperature being maintained at approximately 77K, the apparatus comprising a permanent magnet (12), a superconducting quantum interference device (14) constructed from material having a critical temperature above 77K, and a flexible superconducting flux transformer (16) that couples the susceptibility signal to the superconducting quantum interference device, the transformer comprising superconducting material disposed on a flexible metallic substrate.



BEST AVAILABLE COPY

BEST AVAILABLE COPY

*FOR THE PURPOSES OF INFORMATION ONLY*

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakhstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		